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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/142,970	04/02/99	ACHTMAN M	7101/0E616

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EXAMINER	
GRASER, J	
ART UNIT	**PAPER NUMBER**
1645	10

DATE MAILED: 05/17/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/142,970	Achtman et al.
Examiner	**Art Unit**
Graser, Jennifer	1645

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Election, 2/20/2001* .

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *26-50* is/are pending in the application.

4a) Of the above, claim(s) *42-50* is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *26-41* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

19) ☐ Notice of Informal Patent Application (PTO-152)

20) ☐ Other:

DETAILED ACTION

1. Applicant's election with traverse of Group I, claims 26-41, in Paper No. 9 is acknowledged. The traversal is on the ground(s) that the peptides of Group I and the method of forming a carrier-antigen complex and the conjugate relate to a single inventive concept because, they argue, that the peptide is the single inventive concept. This is not found persuasive because it is maintained that the two Groups do not possess the same inventive concept. As stated in the Restriction Requirement, the special technical feature of Group II is a carrier-conjugate complex, methods for making said complex and vaccines comprising said complex. The products in Groups I and II are structurally different and will produce different immune responses. The search for the two groups will not be coextensive and it would place a serious burden on the Examiner to examine both Groups.

The requirement is still deemed proper and is therefore made **FINAL**.

Claims 42-50 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention. Applicant timely traversed the restriction (election) requirement in Paper No. 9.

Claims 26-41 are currently under examination.

Priority

2. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 119 as follows:

> An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification (37 CFR 1.78).

A statement reading "This is a 371 of Application No. PCT/EP98/00294, filed 1/20/98 which claims priority under 119(a)-(d) to Application No. EP 97100883.4, filed 1/21/97." should be entered following the title of the invention or as the first sentence of the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. ms 26-41 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing ticularly point out and distinctly claim the subject matter which applicant regards as the inv

26-41 need to specify that the peptides are "isolated" or "purified" in order to avoid a naturally occurring peptide. The use of the terms "having" and "comprises" and enc full-length protein. The term "comprising" allows for the inclusion of additional ingredients, e. major amounts. Further, it is unclear how the amino acid sequence can vary without upsetting the function of the polypeptide.

Claims 26-41 are vague and indefinite because it is unclear what is encompassed by the term "homologous". It is unclear what level of homology is shared between the peptide and those

peptides identified by SEQ ID NO. . The term "homologous" reads on a fragment which shares one amino acid in common. The specification provides insufficient guidance as to what level of homology and characteristics define homologous. Further, it is unclear how the amino acid sequence can vary without upsetting the function of the polypeptide.

Claim 26 is vague and confusing because it is unclear exactly what it being claimed. If Applicants intend to claim fragments of a polypeptide, then the exact fragment should be identified, i.e., an isolated polypeptide consisting of amino acids 1 to 40 of SEQ ID NO:1. The claims is also vague and confusing because the preamble recites "a peptide having 40 to 200 amino acid residues" while parts (a)-(e) only recite the longest peptide as 104 amino acid residues in length. This is extremely vague and confusing. What are the other 96 amino acid residues? Additionally, the recitation of beginning with any one of positions 1 to 5 and ending with any one of 40 to 104 does not limit the claim because open language is used. The peptide could encompass 1-600 amino acid residues and still anticipate the claim.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 26-41 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the

art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The breadth of the instant claims contain amino acid sequences other than what is specified in the sequence disclosure. The specification states that substitutions, additions, or deletions may be made to the defined sequences; however, the specification provides no guidance as to what nucleotides may be changed without causing a detrimental effect to the protein/peptide to be produced. The specification provides insufficient guidance as to what level of homology and characteristics define homologous. Further, it is unclear how the amino acid sequence can vary without upsetting the function of the polypeptide. It is unpredictable as to which amino acids could be removed and which could be added. While it is known that many amino acid substitutions are possible in any given protein/peptide, the position within the protein/peptide's sequence where amino acid substitutions can be made with a reasonable expectation of success are limited. Other positions are critical to the protein's structure/function relationship, e.g., such as various positions or regions directly involved in binding, catalysis in providing the correct three-dimensional spacial orientation of binding and catalytic sites. These regions can tolerate only very little or no substitutions. A 1-99% change in the coding region (as is encompassed by the present claims) could cause a detrimental effect to the protein/peptide to be produced and could cause total negation of any epitopes which could induce an immune response or much less produce a functional protein or fragment. Additionally, selective point mutation to one key antigen residue could, in practical terms, eliminate the ability of an antibody to recognize this

altered antigen. If the range of decreased binding ability after single point mutation of a protein antigen varies one could expect point mutations in the protein antigen to cause varying degrees of loss of protection, depending on the relative importance to the binding interaction of the altered residue. Alternatively, the combined effects of multiple changes in an antigenic determinant could again result in loss of protection. A protein having multiple antigenic sites, multiple point mutations, or accumulated point mutations at key residues could create a new antigen that is precipitously or progressively unrecognizable by any of the antibodies in the polyclonal pool. It is expensive and time consuming to make amino acid substitutions in a particular region of a protein in view of the possibilities for change in structure and the uncertainty as to what utility will be possessed.

Applicants have provide no guidance to enable one of ordinary skill in the art how to determine, without undue experimentation, the effects of different amino acid substitutions and the nature and extent of the changes that can be made. Given the lack of guidance contained in the specification and the unpredictability for determining acceptable amino acid substitutions, one of skill in the art could not make or use the broadly claimed invention without undue experimentation.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 26-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Lomholt et al (Mol. Microbiol., 1995, 15: 495-506).

Lomholt et al teach a polypeptide which is 100% identical to positions 1-104 of Applicants' SEQ ID NO:1, 96.1% similar to Applicants' SEQ ID NO:2, 95.4% similar to Applicants' SEQ ID NO:3, 80.5% similar to Applicants' SEQ ID NO:4 and 87.4% similar to Applicants' SEQ ID NO:5. See attached sequence alignment. With regard to claims 33-41, the patentability of a product does not depend on its method of production. If the product in a product-by-process claim is the same as a product of the prior art, then the claim is unpatentable even though the prior art product was made by a different process.

9. Claims 26-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Pohlner et al. (Nature. 1997, 325; 458-462).

Pohlner et al teach a polypeptide which is 87.5% identical to positions 1-104 of Applicants' SEQ ID NO:1, 90.4% identical to Applicants' SEQ ID NO:2, 87.9% similar to Applicants' SEQ ID NO:3, 87.9% similar to Applicants' SEQ ID NO:4 and 98.9% similar to Applicants' SEQ ID NO: 5. See attached sequence alignment. With regard to claims 33-41, the patentability of a product does not depend on its method of production. If the product in a product-by-process claim is the same as a product of the prior art, then the claim is unpatentable even though the prior art product was made by a different process.

10. Claims 26-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Meyer et al. (US Patent Serial No. 5,268,270).

Meyer et al teach a polypeptide which is 86.9% identical to positions 1-104 of Applicants' SEQ ID NO:1, 89.9% identical to Applicants' SEQ ID NO:2, 87.4% identical to Applicants" SEQ ID NO:3, 91.4% identical to Applicants" SEQ ID NO:4 and 98.5% identical to Applicants" SEQ ID NO:5. See attached sequence alignment. With regard to claims 33-41, the patentability of a product does not depend on its method of production. If the product in a product-by-process claim is the same as a product of the prior art, then the claim is unpatentable even though the prior art product was made by a different process.

11. Correspondence regarding this application should be directed to Group Art Unit 1645. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15,1989). The Group 1645 Fax number is (703) 308-4242 which is able to receive transmissions 24 hours/day, 7 days/week.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer E. Graser whose telephone number is (703) 308-1742. The examiner can normally be reached on Monday-Friday from 7:00 AM-4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette Smith, can be reached on (703) 308-3909.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

5/16/01

Jennifer Graser
Primary Examiner
Art Unit 1645